A Silent Pandemic: Intersectionality and Eco Anxiety Among College Students at UC Berkeley

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ABSTRACT

Eco anxiety refers to heightened concern regarding the state of the environment and is a growing topic of importance when considering the holistic scope of environmental violence in the modern age. This study explores how individuals' perception of their privilege in relation to their intersectional identities exacerbates eco anxiety among college-aged students at UC Berkeley. This study utilizes intersectional framework in order to gain nuanced insight into how identity can influence students' experiences of eco anxiety. Additionally, this study investigates where students primarily get their information about environmental issues and how students cope with their eco anxiety. To answer these questions, I conducted a comprehensive survey, sent out to classes and clubs at UC Berkeley which included questions from the Hogg's Eco Anxiety Index and Intersectionality Index in order to quantify students' responses. The survey results show that a majority of students experience some level of eco anxiety. Additionally, the results indicate a positive correlation between intersectional discrimination and eco anxiety, indicating that individuals who experience higher levels of discrimination based on their personal identity are more likely to experience greater eco anxiety. Results also revealed that students often obtain their information about environmental issues from classes in school and social media and that most students participate in pro-environmental behavior in order to cope with eco anxiety. These findings provide valuable insights into the complex relationship between identity, discrimination, and eco anxiety, with important implications for mental health and environmental policies.

KEYWORDS

climate grief, intersectionality discrimination index, hogg eco anxiety index, mental health, environmental justice

INTRODUCTION

From wildfires to extreme weather to biodiversity loss, the environmental effects of the climate crisis affect people globally. However, there are many less acknowledged symptoms of the climate crisis that are not as overt. There is growing evidence that one's environment (both socially and physically) plays a crucial role in one's physical and mental health (Nardo et al. 2010), and due to the scale of the crisis, a new silent plague is sweeping the globe: eco-anxiety (Agoston et al. 2022). The National Wildlife Federation estimated that 200 million Americans will at some point experience emotional distress due to the climate crisis (National Wildlife Federation 2011). In spite of this reality, the field of mental health, especially pertaining to the environment, is understudied and overlooked (Soutar 2022). Yet, within youth environmentalist spaces, this topic of eco-anxiety has recently begun to gain recognition (Nice et al. 2022).

Eco-anxiety, climate grief, and eco-anger are an issue particularly for young people. Whether exposed to the realities of the climate crisis predominantly through the media or through first hand experience, Generation Z is known as the "climate generation" due to the immense proportion of young environmentalists in comparison to previous generations (Coppola 2021). There are many factors that contribute to heightened eco-anxiety in young people including their family and peers, their school and community, the government and media outlets, and their culture (Crandon et al. 2022). Being exposed to such stressors from a young age can deeply impact the short and long term psychological health of these individuals (Patel et al. 2021). Moreover, because the climate crisis is all encompassing, many young people feel disempowered in their ability to create tangible change (Patel et al. 2021). This feeling of disempowerment can lead to a number of mental health issues that can permeate into other areas of life as well.

In a way, environmental activism through social media posts, green consumerism, and sustainable actions has become a coping mechanism for young people to feel like they can make a difference for their future (Schwartz et al. 2022). Environmental clubs and spaces are often places of solidarity and community to process the immense climate anxiety and grief among young people (Benoit et al. 2021). However, many of these spaces neglect the intersectionality between race, gender, sexuality, and positionality in regards to how different people are disproportionately affected by the climate crisis (Gislason et al. 2021).

Defining eco anxiety, climate grief, and eco anger

Eco-anxiety, climate grief, and eco-anger are three commonly intertwined emotions related to the state of the environment that many individuals experience on a daily basis (Agoston 2022). Eco-anxiety is defined by the American Psychological Association as being "a chronic fear of environmental doom" (Schreiber 2021). On the other hand, climate grief is defined as a feeling of sadness and loss related to the ever-worsening state of the environment (Agoston 2022). Finally, the least understood and studied response to environmental destruction is eco-anger. Although eco-anxiety and climate grief are known as mental health issues, eco-anger is an emotion that often stems from a combination of the two. Eco-anger refers to active anger about the past and current perpetuation of environmental violence and destruction (Agoston et al. 2022). Making the distinction between eco-anxiety, climate grief, and eco-anger is critical to understand the nuanced feelings many people have in response to the state of the environment (Stanley 2021).

Intersectionality framework and causes of eco anxiety

Intersectionality is an analytical framework that identifies how an individual's different socio-political identities compound to create different experiences of oppression and/or privilege (Corus and Saatcioglu 2015). Communities that are low-income, of color, or Indigenous, tend to experience more mental health risks because of environmental injustice and the effects of climate change (Vecchio 2022).. These issues include being exposed to increased pollution, extreme weather, and displacement from their homes. Because of these exacerbated environmental impacts, understanding and applying an intersectional framework which accounts for nuanced intersections of identity is necessary when attempting to understand how individuals are differentially affected by mental health issues related to the climate crisis.

Without framing identity through an intersectional lens, there can be a lack of nuance in considering the complexities of prejudice and privilege that different individuals face due to their overlapping identities. For example, considering gender without also addressing other identities such as race and class can lead to assumptions about a certain gender that is often not the case for all individuals who hold that identity (Shields 2008). As another example, the experiences of a

white cis woman are likely going to be very different from those of a black trans woman, even though they both are women. Although there is beginning to be dialogue in environmentalist spaces regarding eco-anxiety, many outside of these circles might not even recognize that this problem is occurring and often lack the community and/or resources to cope with these issues.

Sources of environmental information and eco anxiety

Analyzing common ways that people are exposed to and/or learn about climate change distills the core causes of eco-anxiety and climate grief (Crandon et al. 2022). One common source of exposure that can lead to environmental grief is directly encountering physical environmental losses (Cunsolo and Ellis 2018). Similar to the postwar mental illnesses suffered by a refugee, encountering environmental disasters such as Hurricane Katrina or the wildfires in Northern California can cause severe environmental grief and eco-anxiety (Morrice 2013). Another way that people are exposed to environmental disasters is through the media and the availability of mass volumes of traumatic imagery and articles on the internet (Maran 2021). Although there are many distinct places that people hear about environmental issues, many individuals tend to report that they were exposed to a combination of different sources which can then lead to eco-anxiety and climate grief (Cunsolo and Ellis 2018). However, many students at university might report that they learn the most about environmental issues in classes in school. Finally, another place where individuals gain information about environmental issues and topics is through conversations with friends and family. Overall, it is important to consider the sources of information for environmental issues and how that directly influences mental health issues.

Coping with eco anxiety and climate grief

Regardless of the cause of eco-anxiety and climate grief, many people have varied coping responses to these mental health conditions (Scheirich 2020). Many people cope with their anxiety through deep breathing and mindfulness, exercises such as yoga and tai chi, and through facing the fears that might be causing their anxiety (LeDoux and Gorman 2001). However, others suppress their pain through humor and/or choose to actively ignore their anxiety or grief (Ágoston et al. 2022). Coping with eco-anxiety is similar in many ways to coping with standard

anxiety. However, due to the exponentially worsening nature of the climate crisis, eco-anxiety can be more difficult to cope with in the same ways as other anxieties (Gunasiri et al. 2022). Because coping mechanisms for eco-anxiety are distinct from general anxiety, distinguishing how people cope with eco-anxiety specifically is very important to understand when mitigating mental health issues related to the environment. One example of a method that is fairly unique to coping with eco-anxiety in particular is engagement in climate action and activism (Stanley et al. 2021).

What is unknown in the literature at this point is a combination of the causes for eco-anxiety both demographically and situationally, as well as how people cope with these issues in their daily lives. Understanding individuals' degree of hope for the future and their methods of coping with eco-anxiety and grief can help cultivate a dialogue of healing and constructive methods for dealing with these large issues (Islam and Kieu 2021).

Students at the University of California, Berkeley

College-aged students, particularly at UC Berkeley, are uniquely impacted by anxiety and tend to be highly informed about global issues. These students are in their early adulthood and are soon to be the primary decision makers in society, making them a particularly important group to study. One thing that makes college students as a whole a particularly interesting group to study is the commonality of identity transitions that often occur during college. For example, many young adults explore their sexuality or gender identity during college, which can greatly impact the way that they experience the world. Furthermore, college students in general are unique when considering eco anxiety and climate grief, as they are the first generation to have access to the internet, AI, social media and an abundance of information about environmental issues from a young age (Kelly 2017). Many college students report higher levels of eco-anxiety, particularly those who take environmental classes and are in environmental majors (Kelly 2017). These students are not equipped to deal with these large issues alone, so many turn to different coping mechanisms, often subconsciously, to deal with the weight of all of the information they are being fed. Due to the significance of the mental health issues college students face (Kitzrow 2003), there is concern that many will choose to disengage with the broader world issues at hand.

One feature that sets the UC Berkeley student population apart from the general college student population is their commitment to social justice and activism. This university has a long

history of political engagement and student-led protests (Cohen and Zelnik 2002), and today's students are no exception to this reputation. Whether it's advocating for environmental sustainability, fighting for racial and gender equality, or raising awareness about mental health, many UC Berkeley students are passionate about making a difference in the world. For example, there are multiple clubs and organizations that specifically focus on environmentalism on campus, including The Green Initiative Fund (TGIF), Re-USE, the Student Organic Garden Association, and the Student Environmental Resource Center (SERC). Therefore, this study focuses on the experiences of college-aged students at UC Berkeley to address the issues of mental health in a continually technologically advancing society as well as how society will respond to and cope with environmental issues overall in the future.

Research Questions

This study aims to address factors such as race, class, gender, and sexuality, particularly among college- aged students to determine how students view environmental issues and the mental health ramifications of these issues. In this study I ask: to what extent do intersecting identities of race, class, gender, and sexuality exacerbate eco anxiety and climate grief among college aged students and how do these students cope with these issues? Within this broad central question, I subsequently ask three sub questions: (1) To what extent do individuals' perception of their privilege based on their intersectional identities coincide with experiences of eco anxiety among college age students at UC Berkeley? (2) Where do students at UC Berkeley primarily get their information regarding environmental issues? And (3) What are the primary ways that UC Berkeley students cope with eco-anxiety?

For the first question, I expected that various identities will have a different effect, but overall, students' intersections of identities will all influence the likelihood one experiences eco anxiety/climate grief. For the second sub question, I hypothesized that past experiences and media are the most common sources of environmental information for students, although the other factors play a role as well. Finally, for the third question, I predicted that students either engage in prosocial coping mechanisms or apathetic coping mechanisms depending on a variety of factors; those who experience more anxiety might try to engage in more active behaviors to help the problem, whereas those who experience more grief might tend to shut down or actively

ignore the issue. My data collection objective was to survey students on their intersectional identities of race/class/gender/sexuality, the degree of perceived discrimination they face based on their identities, and how much anxiety they experience due to environmental issues. I aimed to survey over 200 UC Berkeley students on what factors have caused the most eco-anxiety for them and rank their responses by how much they have affected them.

METHODS

Study site

The study population is sourced from classes and clubs at University of California Berkeley (UCB). I chose to conduct my research at UCB because of the university's reputation for environmental activism and social justice. Demographically, in Fall 2022, UCB was composed of a student body that identifies as Asian (43.2%), White (19.7%), Hispanic or Latino (19.8%), Two or More Races (5.5%), Black or African American (3.4%), American Indian or Alaska Native (0.6%), Native Hawaiian or Other Pacific Islanders (0.1%), International (10%), and 3.4% declined to state ("UC Berkeley Fall Enrollment Data for New Undergraduates | Office of Planning and Analysis" 2022). Additionally, at UCB, male students made up 45.6% of the student body (20,642 total), female students made up 52.9% (23,974 students), and .008% of students identify as non-binary (363 total) ("UC Berkeley Quick Facts | Office of Planning and Analysis" 2022). The student body is also made up of 84.5% California residents, making in-state students the majority (AdmissionSight 2022).

To distribute the survey, I sent an email to department heads at UCB across all fields, asking them to forward the study to the professors in their department to then send to their students. This approach aimed to maintain students' anonymity through the degree of separation between the respondents and researchers. Additionally I sent an email containing the survey link to clubs based on environmental or identity related themes at UCB with a link for the students to participate in the study. The goal was to survey students who have an interest in either or both environmental issues and social issues in order to understand how individuals who are already interested and educated in environmental or social issues experience eco anxiety. The consent form and survey in its entirety are included in Appendix A.

Ethics

To protect the privacy of the people surveyed, the survey does not require any names, email addresses, IP addresses, or any other private information. There is a consent form at the start of the survey that participants must agree to which confirms that the participant is between the ages of 18 and 25 and is a US resident. The responses of the survey participants did not record information regarding where they received the survey form. I received exempt approval from the UC Berkeley IRB under the protocol number, 2023-01-15956 before releasing the survey.

Eco anxiety and intersectionality

To understand the experiences of students at these universities, I designed an anonymous survey with several sections through Berkeley Qualtrics. The sections include Eco Anxiety Index, Causes of Eco Anxiety, Coping with Eco Anxiety, Considerations of Future Consequences, Hope for the Future, and Intersectionality Discrimination Index. The survey also included an inquiry regarding the participants' demographic characteristics.

The first sub question asks to what extent does discrimination and different intersectional identities significantly influence eco anxiety in college aged students? The data collection objective is to measure eco anxiety and intersectionality quantitatively. To quantify eco anxiety and intersectionality, the survey was crafted with the following sections: Hogg Eco Anxiety Scale questions (Hogg et al. 2021), and Intersectionality Discrimination Index questions (Scheim and Bauer 2019). Both indexes have been used in previous studies in order to assign a number or ranking for eco anxiety and intersectionality, respectively. Each Likert scale option is associated with a number that is then summed to create a number between 0-1 for eco anxiety and for IDI. To analyze this data I created a scatter plot and ran a linear regression model to determine a correlation between the two variables. Finally, I disaggregated the data to investigate more of the nuanced results. If more data was collected, using a t-test would also be useful in being more confident about the findings.

Sources of environmental information and causes of eco anxiety

The next sub question asks where do students predominantly acquire information about environmental issues, and how do these sources influence how much eco anxiety they experience? The hypothesis is that past experiences and media will be the most common sources of environmental information, and past experiences with climate change/environmental issues will contribute to higher levels of eco anxiety. To measure the sources that people use to learn about environmental issues, I created a section in the survey that has options for where students get their information on climate change/environmental issues. Participants selected their top three sources and then in the next question selected their top one. To conduct analysis, I identified trends and created a bar graph of the top sources. Then, plotted individuals' top source of information with their eco anxiety score.

Coping with eco anxiety

The final sub question investigates the most common ways that college aged students cope with eco anxiety and/or climate grief and what resources are available to help cope. The hypothesis was that students either engage in prosocial coping mechanisms or apathetic coping mechanisms depending on a variety of factors. To measure the coping mechanisms that people use to deal with eco anxiety, I created a section in the survey that has options for ways that students cope with eco anxiety. They were prompted to select their top three coping mechanisms followed by their top coping method. To analyze the data, I identified trends and visually represented the top coping mechanisms through bar graphs with the most common coping mechanisms selected.

RESULTS

Study site

There were a total of 131 respondents to the study. Of the total respondents, 52% identify as female, 39% male, 5% non-binary or gender non-conforming, and 4% declined to respond.

57% of students identify as heterosexual or straight, whereas the remaining 43% identify as LGBTQ+. Five of the total individuals identify as transgender. Furthermore, 42% of students identify as white, 23% Asian, 19% mixed race, 2% Black, 1% Native American, 1% Native Hawaiian or Pacific Islander, and 12% identify as "other." Most students reported being full time students, and many also reported being a part time employee as well. Additionally, 82% of students reported being "somewhat liberal" to "very liberal," and 61% reported being not religious.

Eco anxiety and intersectionality

I found that on average, students scored 0.24 on the Hoggs Eco Anxiety Index score, with a standard deviation of 0.21 and a range from 0 to 1.0, meaning that the average student experiences at least some eco anxiety. The intersectionality discrimination index score ranged from 0 to 1.0, with an average of 0.26 and standard deviation of 0.18. According to the results of the linear regression analysis (Figure 1), r=0.26 and p-value= 0.01803. Although the r value is low, the p-value indicates that there was a statistically significant positive correlation observed between eco anxiety and intersectional discrimination, indicating an association between these two variables in the studied population.

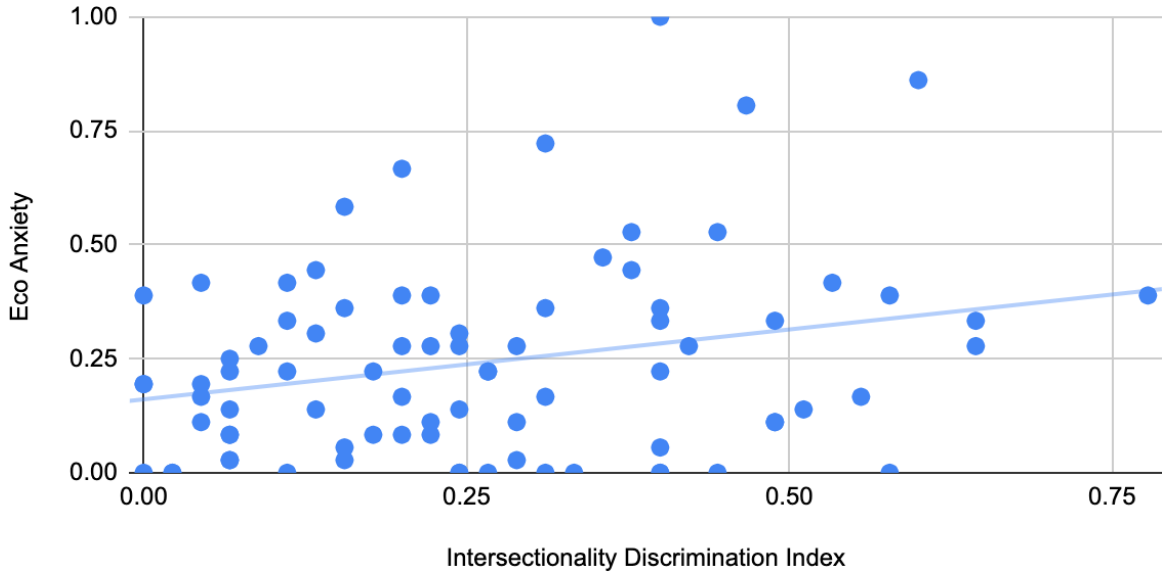

Figure 1. Each participant is assigned a percentage score corresponding to their level of eco-anxiety and intersectional discrimination, respectively, which is represented as a dot on the graph. Multiple students with the same combination of scores are depicted under the same dot.

Eco anxiety and intersectional discrimination scores ranged broadly, with only one participant scoring 100% on eco anxiety. The linear regression line on the plot indicates a statistically significant positive relationship between these two variables, as evidenced by the slope of the line, however there was much spread in the data, and the fit to the regression line was poor.

I found that there was a positive correlation between the level of intersectionality discrimination index scores and students identifying with marginalized identities. This indicates that the intersectionality discrimination index is describing individuals' identity holistically. When asked about their perceived levels of eco anxiety directly, students had an average score of 0.39 with a standard deviation of 0.21, which is much higher than the average Hogg Eco Anxiety Score. When looking demographically, individuals who identify as male score much lower on the average Hogg Eco Anxiety scores (0.19 +/- 0.22) than women (0.28 +/- 0.21) or non-binary people (0.35 +/- 0.15), indicating that men tend to experience less eco anxiety as a whole than non-men (Figure 2).

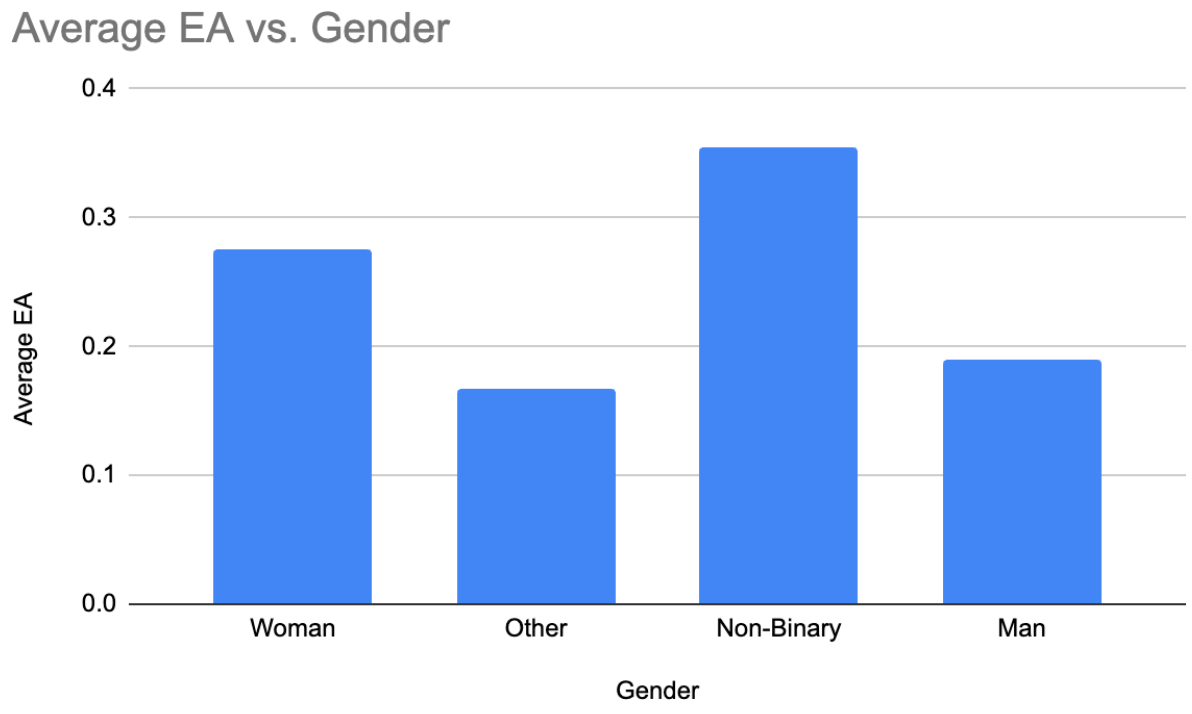

Figure 2. Average Hogg Eco Anxiety Scores for each gender (N=82).

When examining race, respondents who identify as Black had the highest eco anxiety scores, scoring on average 0.26 on the Hogg Eco Anxiety Index. However, there was not much variation between races and eco anxiety scores overall. These results indicate that race might not be the biggest predictor for eco anxiety. However, for intersections of gender and race, there is much less variation between white people of different genders in comparison to BIPOC individuals of different genders. Additionally, for intersections of gender and sexuality, similar trends emerge, with men consistently scoring the lowest on eco anxiety. LGBTQ+ people as a whole tend to have higher eco anxiety averages than straight people. However, for the intersections of race, gender, and sexuality, queer women tend to have higher levels of eco anxiety, regardless of race (Table 3). Furthermore, the results indicated that students self-identifying as "Very Religious" demonstrated lower levels of eco anxiety (0.11), whereas those who self-identified as less religious exhibited higher levels of eco anxiety (Table 4). Finally, for the most privileged identities, white, wealthy men scored the lowest eco anxiety scores on average at only .069, indicating that those who have the most financial and societal privilege have the least amount of eco anxiety.

Straight People	Mean EA	Mean IDI
Woman	0.21	0.28
Man	0.19	0.24

Queer People	Mean EA	Mean IDI
Woman	0.32	0.52
Non-Binary	0.35	0.32
Man	0.21	0.23

White Queer People	Mean EA	Mean IDI
Woman	0.38	0.48
Non-Binary	0.28	0.39
Man	0.22	0.20

BIPOC Queer People	Mean EA	Mean IDI
Woman	0.27	0.56
Non-Binary	0.43	0.25
Man	0.17	0.39

Table 3. MeanHogg Eco Anxiety Scores and Intersectionality Discrimination Index Scores of individuals based on race, gender, and sexuality.

Religion	Mean EA
Not Religious	0.25
Slightly Religious	0.18
Moderately Religious	0.33
Very Religious	0.11

Table 4. Mean Hogg Eco Anxiety Scores based on religiousness.

Sources of environmental information and causes of eco anxiety

The most common channels through which participants receive information on environmental issues, as well as their primary source of information were classes in school (36%), followed by social media (29%), and news sources (23%). In contrast, conversations with friends and family (10%), books (1%), TV or film (0%), and other sources (1%) were less commonly reported (Figure 3).

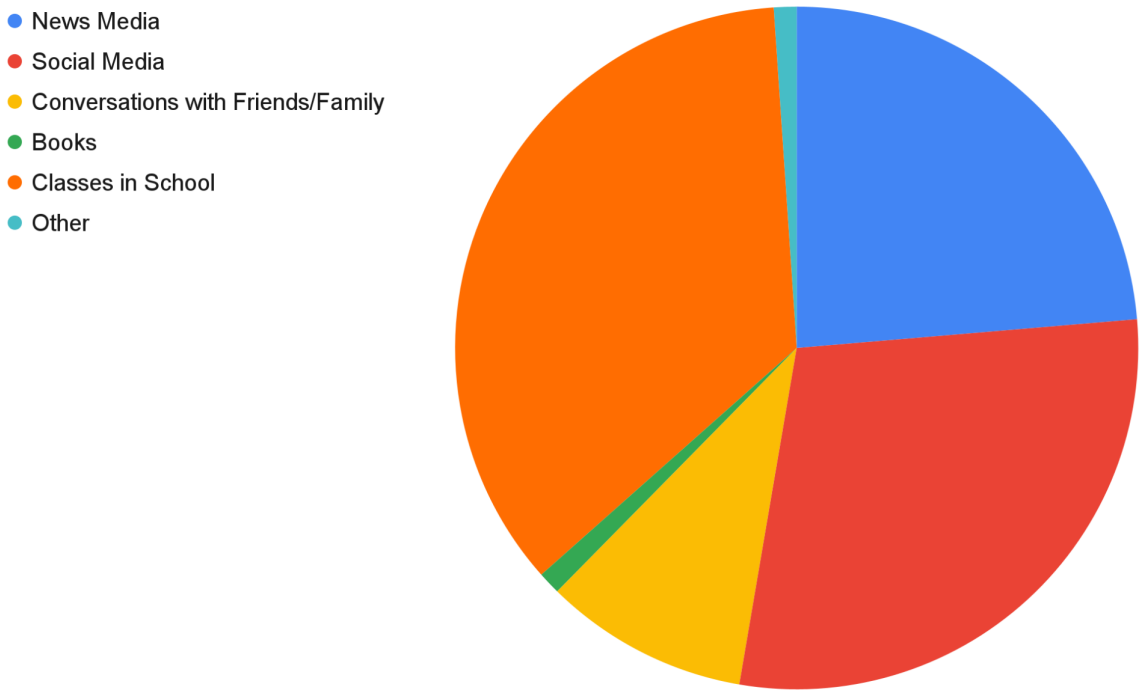

Figure 3. This pie chart indicates the different sources of information where students learn about environmental issues (N=94).

Coping with eco anxiety

The primary coping mechanisms when experiencing eco-anxiety include pro environmental behavior, activism, meditation, connecting with nature, therapy, humor/distractions, and ignoring the issue. There were 94 respondents for this section, and each person chose their top one coping mechanism. The results indicate that personal pro-environmental behavior was the most commonly selected coping mechanism, with 38% of respondents choosing this option. This survey did not describe what the pro-environmental behavior was, rather just reflects a broad umbrella term. Pro-environmental behavior seems like a healthy coping mechanism; however, this is not to say that the respondents are successful in mitigating their anxiety in this way. Other coping strategies identified by the participants included humor and distractions (13%), ignoring the issue (11%), and connecting with nature (11%) as shown in Figure 4. Some respondents (N=12) reported not experiencing eco-anxiety, and thus, did not select any coping mechanisms (Figure 4). When looking at the amount of eco anxiety on average for each top coping mechanism, the highest eco anxiety scores align with those who practice meditation (0.44), go to therapy (0.33), and use humor (0.32) to deal with eco anxiety. On the other hand, those who reported no eco anxiety or chose to ignore the issue have the least amount of eco anxiety.

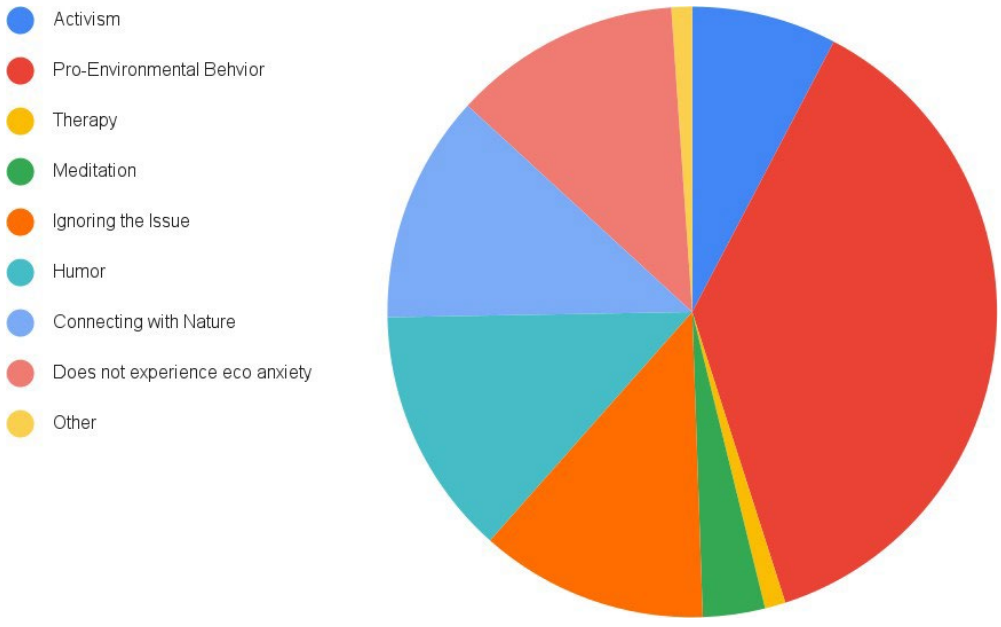

Figure 4. This pie chart exemplifies the different strategies students selected as their top ways to cope with eco anxiety (N=92).

DISCUSSION

Introduction

Students at UC Berkeley have a wide range of experiences of eco anxiety from no anxiety at all to the most severe. Moreover, a significant number of respondents reported experiencing eco anxiety on some level. This study indicates that intersectionality and identity are significant factors to consider for eco anxiety, and based on their experiences, students cope with eco anxiety in different ways, the most predominant being taking part in personal pro environmental behavior. Understanding eco anxiety among students at university is important to consider because eco anxiety is a relatively new concept, with most articles on the subject having been written in the past five years. Universities can use this information in order to support the holistic wellbeing of their students.

Intersectionality and eco anxiety

The study investigated the influence of intersectionality on students' experiences of eco anxiety, demonstrating a positive trend between individuals with higher scores on the Intersectional Discrimination Index (IDI) and the Eco Anxiety Index (EAI). Individuals who perceive or experience higher levels of discrimination based on their personal identity are more likely to experience higher levels of eco anxiety. Conversely, individuals who identify with less marginalized identities tend to experience lower levels of eco anxiety, as reflected in their lower scores on the EAI. There were few exceptions to this trend, however, as the gender disparity was less distinct for BIPOC in comparison to white people. These findings are consistent with previous research by Vecchio (2022), which showed that climate change exacerbates psychological issues related to the environment, especially among Indigenous communities (Vecchio 2022). The study also highlighted the impact of different racial identities on individuals' experiences of eco anxiety. Similarly, Goldsmith's (2022) study on the LGBTQ+ community suggests that members of this group are disproportionately affected by environmental exposures and are more susceptible to experiencing anxiety and grief related to the environment, particularly LGBTQ+ persons of color. Eco anxiety is a complex phenomenon that is influenced by various factors, including race, religion, and personal identity. Intersectionality and degree of

privilege significantly influence students' experiences of eco anxiety. The findings indicate that marginalized groups are more likely to experience higher levels of eco anxiety, whereas individuals with less marginalized identities tend to experience lower levels. The study provides important insights into the complex relationship between identity, discrimination, and eco anxiety, which have important implications for mental health and environmental policies.

The biggest indicator for eco anxiety observed in this study was gender, above any other factor. Men, across the board, scored the lowest for eco anxiety. Women tended to have higher eco anxiety, and non binary people consistently scored the highest. These differences by group could be due to the fact that men have more societal privilege mixed with societal pressure to suppress emotions (Chatmon 2020). These trends are true across race, sexuality, and wealth. Moreover, the group that exhibited the lowest eco anxiety was wealthy men regardless of race. Wealthy men have a greater sense of financial security, which can reduce anxiety levels and cause them to be less concerned about the economic impact of environmental policies or their personal ability to adapt to climate change in general (Chatmon 2020). Additionally, wealthy men may experience less direct exposure to environmental harm such as pollution or climate change induced natural disasters. They may also live in areas that are overall less affected by these issues or have greater adaptation strategies to deal with environmental issues (Chatmon 2020).

Religion and eco anxiety

Individuals who identified as strongly religious tended to report little to no eco anxiety at all, consistent with previous research on the relationship between religion and environmental attitudes and behaviors (Gifford & Gifford 2016). Specifically, Gifford and Gifford (2016) found that religious individuals express less concern about environmental issues and perceive less threat from environmental problems compared to non-religious individuals. One possible explanation for this relationship could be that religious beliefs provide a sense of comfort and security, which may lessen the experience of eco anxiety (Levin 1993). For example, some religious beliefs emphasize the idea that the world is under divine control, which could mitigate concerns about environmental degradation. Additionally, religious communities may offer social support and a sense of belonging, which could also buffer against eco anxiety (Levin 1993).

Sources of Information and Causes of Eco Anxiety

Most students learn about environmental issues through classes and social media, with classes being the most significant source. Conversely, TV shows and films were reported the least as sources of information, indicating that these media platforms may not significantly impact individuals' perceptions of the environment. This result might be because of the rise of short form media and social transition away from longer forms of media, such as TV or documentaries. Furthermore, individuals who reported low levels of eco anxiety stated that they received information from friends and family or social media, suggesting that the community and media to which individuals are exposed can significantly influence their likelihood of experiencing eco anxiety. Maran's study examined media exposure to climate change among Italian university students, finding that exposure to environmental messaging through social media, newspapers, and television has a positive correlation with eco-anxiety and often leads to an increase in pro-environmental behavior. Additionally, Crandon (2014) uses a social-ecological framework to investigate how young people experience eco-anxiety, exploring various sources of eco-anxiety, including micro- (family, peers), meso- (school, community), exo- (government, media), and macro- (culture) systems. By grouping these sources of information into different scales, Crandon (2014) provides a useful framework for understanding how different sources interplay to foster anxiety among young people. Overall, these studies highlight the importance of considering the sources of information students rely on when examining eco anxiety, suggesting that exposure to environmental messaging through social media, classes, and traditional media outlets can significantly impact individuals' likelihood of experiencing eco anxiety. Furthermore, the ramifications of understanding the various sources of eco-anxiety include allowing educators and policymakers more information in order to develop strategies to reduce anxiety among young people and promote more sustainable behavior.

Limitations and Future Directions

One limitation of this study was the small sample size. I intended to survey more students, which would have provided results that could be more representative of the student body as a whole. However, because there was little to no direct communication with department chairs and professors after the initial emails, I was unsure about how many distributed the

survey. Because of the low number of responses, the results may not be a true representation of students' experiences and opinions. There are also several groups of individuals who were not heavily represented in this study (e.g. LGBTQ+ students, Black students, and students with varied political ideologies). This underrepresentation was expected to a certain degree, given the demographic makeup of UC Berkeley overall, such that this study is not representative of all UC Berkeley students, college students, or Gen Z in general. Rather, the drawbacks of a small sample size indicates that more research is needed in this field to fully understand the nuances of intersectionality and eco anxiety. Future studies should survey a broader range of individuals with a larger sample size.

Additionally, the demographic questions were limiting, as there were no options for every possible identity. Moreover, there was no racial category for Middle Eastern people or Latinx, causing many individuals to have to choose another category for lack of the correct descriptor. Because of this constraint on the survey, the racial dimensions might not be as descriptive or representative as they could have been. Moreover, religiousness is another facet of identity that should be investigated more in the context of eco anxiety. It is important to note, however, that the relationship between religion and eco anxiety is complex and may vary depending on factors such as the specific religious beliefs and practices of the individual. Nevertheless, the findings highlight the need for further research on the role of religion in shaping individuals' experiences of eco anxiety and their attitudes and behaviors towards the environment. Other dimensions of privilege could have also been explored such as being a first generation college student, immigration status (e.g. DACA), being an international student, military/veteran status, and being a student parent. These factors also can play a role in the degree of privilege, discrimination, or marginalization that students face and can be important areas of future research.

Another limitation of this study is the quantitative nature of the survey. To statistically analyze the information, many nuanced ideas and experiences were condensed into likert scale questions. There were only three open ended questions for elaboration or comments, meaning that the results might not encompass a completely nuanced representation of students' experiences. Future research should include interviews with students on their experiences to qualitatively supplement the results and allow for more nuanced understanding. Additionally, this study focuses specifically on eco anxiety and does not address eco grief or eco anger which are distinctly different from eco anxiety, reflecting the need to investigate the intricacies and

intersections of these emotions among students through further developing the intersectionality discrimination index to better represent students' identities.

Broader implications

Although acknowledging its limitations, this study has important implications for advancing discussions on intersectional discrimination, privilege, and eco anxiety, as well as understanding how students cope with these issues. The findings regarding where students get their information about environmental issues highlight the need for further investigation into the sources of environmental information among young people and how media propaganda and political implications can shape their views on environmental concerns and climate change. The study underscores the importance of considering the broader issue of environmental justice and mental health, with the aim of raising awareness about eco anxiety, intersectional privilege, and discrimination. The results suggest that addressing these issues requires a shift in conventional thinking about the social and personal impacts of environmental issues in the modern world.

Moreover, this research highlights the potential impact of environmental issues on the well-being and mental health of individuals, particularly those from marginalized communities who may experience the disproportionate effects of environmental degradation. Overall, this study offers valuable insights into the complex relationship between environmental issues, social justice, and mental health, and emphasizes the need for ongoing interdisciplinary research and engagement to address these critical issues. These findings underscore the need for more equitable policies and practices that promote environmental justice, and for more comprehensive efforts to support the mental health of those impacted by environmental issues.

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APPENDIX

Consent Form

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY
The University of California Berkeley

Title of Project: A Silent Pandemic: Intersectionality and Eco-Anxiety Among College Students

Principal Investigator: Joseph Kantenbacher, 201C Akeley-Lawrence Science Center, Vermillion, SD 57067 (605) 677-6122 joseph.kantenbacher@usd.edu
Other Investigators: Tay Kavieff, University of California, Berkeley, Berkeley, CA 94720

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be a U.S. resident aged 18 years or older. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to better understand how young adults in the United States think about contemporary issues. About 400 people will take part in this research.

What will happen if you take part in this study?

If you agree to take part in this study, you will be asked to complete the following online survey. The survey will start with questions about your reactions to the current state of the world. You will then be asked questions about your identity and beliefs. The study will conclude with a set of questions about your background. The entire survey should take about 10 minutes to complete.

What risks might result from being in this study?

There are some risks you might experience from being in this study. Participation in this study involves thinking about possible futures and may prompt uncomfortable reflections on the current and potential future state of the world. If the process of answering thee questions makes you too upset to continue participating, please consider taking a break or even withdrawing from participation. However, there are no risks in participating in this research beyond those experienced in everyday life.

What are the potential benefits from this study?

Although you will not directly benefit from being in this study, others might benefit because this research might provide a better understanding of how people of different backgrounds experience the world.

How will we protect your information?

The records of this study will be kept confidential to the extent permitted by law. Any report published with the results of this study will not include any information that could identify you. We will protect the confidentiality of the research data by not collecting any identifying information. Further, we will store data files on password-protected computers that are only accessible to the researchers. It is possible that other people may need to see the information we collect. These people work for the University of South Dakota and other agencies as required by law or allowed by federal regulations.

How will my information be used after the study?

After this study is complete, your deidentified data may be stored indefinitely in secure cloud storage and shared with other researchers through an open access repository. Your deidentified data will NOT include your name or other personal information that could directly identify you. Your deidentified study data may be used in future studies or shared with other researchers

without asking for additional consent for that sharing. Your Participation in this Study is Voluntary It is up to you to decide whether to be in this research study. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer. If you are a student at a university affiliated with this research, know that your participation and responses are entirely anonymous, so no academic benefit or penalty will be incurred by your choice to participate or not.

If you have questions regarding your rights as a research subject, you may contact The UC Berkeley- Office of Human Subjects Protection at (510)642-7461. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

With your consent before agreeing to be part of the research, please be sure that you understand what the study is about. Keep this copy of this document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Survey Questions

I agree to participate in this research. I also affirm that I am a student at UC Berkeley or University of South Dakota, a U.S. resident (regardless of immigration/citizenship status), and between 18-25 years old.

o Yes (1)

Over the last 2 weeks, how often have you been bothered by the following problems, when thinking about climate change and other environmental conditions?

“The term ‘eco-anxiety’ is used to describe the mental and emotional distress an individual may experience in response to the threat of climate change and global environmental problems”

Knowing this definition, how much eco-anxiety do you experience?

- o Not at all (1)
- o Sometimes (2)
- o Often (3)
- o Almost always (4)

In the last 2 weeks, how often have you felt nervous, anxious or on edge when thinking about the state of the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you not been able to stop or control your worrying due to the state of the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you felt afraid due to the state of the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you been unable to stop thinking about future climate change and other global environmental problems?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you been unable to stop thinking about past events related to climate change?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you been unable to stop thinking about losses to the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you experienced difficulty sleeping due to the state of the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you experienced difficulty enjoying social situations with family and friends due to the state of the environment?

- o Not at all (1)
- o Several of the days (2)
- o Over half the days (3)
- o Nearly every day (4)

In the last 2 weeks, how often have you experienced difficulty working and/or studying due to the state of the environment?

- o Not at all (1)

o Several of the days (2)
o Over half the days (3)
o Nearly every day (4)

In the last 2 weeks, how often have you felt anxious about the impact of your personal behaviors on the earth?

o Not at all (1)
o Several of the days (2)
o Over half the days (3)
o Nearly every day (4)

In the last 2 weeks, how often have you felt anxious about your personal responsibility to help address environmental problems?

o Not at all (1)
o Several of the days (2)
o Over half the days (3)
o Nearly every day (4)

In the last 2 weeks, how often have you felt anxious that your personal behaviors will do little to help fix the problem?

o Not at all (1)
o Several of the days (2)
o Over half the days (3)
o Nearly every day (4)

If applicable, please describe how your anxiety or distress about the environment impacts you (e.g., impacts your mood, ability to work).

_____

Where do you most often hear about environmental events/ideas/etc.? (select up to THREE)

▢ News Sources (1)

- ▢ Social Media (2)
- ▢ Conversations with friends/family (3)
- ▢ TV/film (4)
- ▢ Books (5)
- ▢ Classes in school (6)
- ▢ Other (7) _____

What is your top source of information about environmental events/ideas/etc.?

- o News Sources (1)
- o Social Media (2)
- o Conversations with friends/family (3)
- o TV/film (4)
- o Books (5)
- o Classes in school (6)
- o Other (7) _____

What ways are you currently coping/ have you previously coped with anxiety related to the environment? (select up to THREE)

- ▢ Activism/getting involved in community efforts (1)
- ▢ Personal pro-environmental behavior (using less water, using public transportation, etc.) (2)
- ▢ Therapy/medication (3)
- ▢ Meditation/spirituality (4)
- ▢ Ignoring the issue (5)
- ▢ Humor/distractions (6)
- ▢ Connecting with nature (7)
- ▢ I don't experience anxiety related to the environment (8)
- ▢ Other (9) _____

What is the top way that you currently cope/ have previously coped with anxiety related to the environment?

- o Activism/getting involved in community efforts (1)
- o Personal pro-environmental behavior (using less water, using public transportation, etc.) (2)
- o Therapy/medication (3)
- o Meditation/spirituality (4)
- o Ignoring the issue (5)
- o Humor/distractions (6)
- o Connecting with nature (7)
- o I don't experience anxiety related to the environment (8)
- o Other (9) _____

I consider how things might be in the future, and try to influence those things with my day to day behavior.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.

- o Strongly disagree (1)
- o Somewhat disagree (2)

- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I think it is more important to perform a behavior with important distant consequences than a behavior with less important immediate consequences.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

When I make a decision, I think about how it might affect me in the future.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

My behavior is generally influenced by future consequences.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)

o Somewhat agree (4)
o Strongly agree (5)

How hopeful are you for the future of human life on earth?
o Not at all hopeful (1)
o Not very hopeful (2)
o Mildly hopeful (3)
o Very hopeful (4)
o My hope fluctuates (5)

How hopeful are you for yours and your family's future?
o Not at all hopeful (1)
o Not very hopeful (2)
o Mildly hopeful (3)
o Very hopeful (4)
o My hope fluctuates (5)

What gives you hope for the future?

_____

These questions are about experiences related to who you are. This includes both how you describe yourself and how others might describe you. For example, your skin color, ancestry, nationality, religion, gender, sexuality, age, weight, disability or mental health issue, and income.

Because of who I am, a doctor or nurse, or other health care provider might treat me poorly.
o Strongly disagree (1)
o Somewhat disagree (2)
o Neither agree nor disagree (3)
o Somewhat agree (4)
o Strongly agree (5)

Because of who I am, I might have trouble finding or keeping a job.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Because of who I am, I might have trouble getting an apartment or house.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I worry about being treated unfairly by a teacher, supervisor, or employer.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I may be denied a bank account, loan, or mortgage because of who I am.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I worry about being harassed or stopped by police or security.

- o Strongly disagree (1)
- o Somewhat disagree (2)

- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Because of who I am, people might try to attack me physically.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I expect to be pointed at, called names, or harassed when in public.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

I fear that I will have a hard time finding friendship or romance because of who I am.

- o Strongly disagree (1)
- o Somewhat disagree (2)
- o Neither agree nor disagree (3)
- o Somewhat agree (4)
- o Strongly agree (5)

Gender: How do you identify?

- o Male (1)
- o Female (2)
- o Non-binary / other (3)
- o Prefer not to say (4)

Which of the following most accurately describes your sexual orientation?

o Bisexual/pansexual (1)

o Homosexual (2)

o Lesbian (3)

o Asexual (4)

o Queer (5)

o Heterosexual/straight (6)

o Other/ Prefer not to say (7)

Do you identify as transgender?

o Yes (1)

o No (2)

Which of the following most accurately describes your racial identity?

o White (1)

o Black or African American (2)

o American Indian or Alaska Native (3)

o Asian (4)

o Native Hawaiian or Pacific Islander (5)

o From multiple races (6)

o Other (7)

Which of the following best describes your current financial situation?

o Poor (1)

o Financially insecure (2)

o Financially comfortable (3)

o Wealthy (4)

What best describes your current employment status? (Select all that apply)

▢ Full time employee (1)

▢ Part time employee (2)

- ▢ Full time student (3)
- ▢ Part time student (4)
- ▢ Unemployed (5)
- ▢ Self-employed (6)

Which term best describes your general political beliefs?

- o Very conservative (1)
- o Somewhat conservative (2)
- o Moderate (3)
- o Somewhat liberal (4)
- o Very liberal (5)

To what level, do you consider yourself to be religious?

- o Not religious (1)
- o Slightly religious (2)
- o Moderately religious (3)
- o Very religious (4)
- o Not sure/ prefer not to say (5)

To what level, do you consider yourself to be spiritual?

- o Not spiritual (1)
- o Slightly spiritual (2)
- o Moderately spiritual (3)
- o Very spiritual (4)
- o Not sure/ prefer not to say (5)

Do you have any further thoughts you would like to share?

_____